SNODGRASS REPAIR OF ANTERIOR HYPOSPADIAS

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ABSTRACT

Objective: *To know the outcome of Snodgrass technique for the repair of anterior hypospadias.*

Material and Methods: *This study was conducted at Aman Hospital Peshawar from January 2004 to January 2007 on patients with anterior hypospadias with or without chordee. The entire length of the urethral plate was incised along the midline and the neourethra was tubularized over a 6 or 8 Fr catheters. The chordee usually disappeared after the penis was degloved. Dorsal plication was performed in mild residual chordee. A subdartos fascial flap was created to cover the neourethra and pressure dressing applied with gauze for 7 days. The urethral catheter was removed on the 7th post-operative day.*

Results: *The Snodgrass technique was performed in 50 boys, age range from 2-10 years with a mean age of 3.73 years. The operative time was 45-100 minutes. There were 35 distal penile and 15 midshaft hypospadias. All the patients had excellent cosmetic appearance. The pinhole fistulas were noted in 04 (8%) cases which closed spontaneously after 06 months. A large fistula was noted in 01 case (2%) which was repaired successfully after 6 months. Only 03(6%) cases had a mild degree of meatal stenosis which responded to meatal dilatation. The dehiscence of glans occurred in 02 (4%) cases which were successfully repaired. No urethral stricture was noticed during 6 months follow-up.*

Conclusion: *The Snodgrass repair in the management of anterior hypospadias is simple technique having excellent cosmetic and functional results with low complication rate.*

Key word: *Hypospadias, Repair, Morbidity.*

INTRODUCTION

"Hypospadias" describes a urethral opening proximal to the normal position at the glandular tip. It is the most common penile anomaly affecting 3.5–4.5 per meles 10 000 live births.[1,2]

Surgical repair of hypospadias has remained one of the most taxing problems for reconstructive surgeons, urologists and paediatric surgeons alike, because of high complications rate[3]. The very fact that there are about 300 different operations to manage this tricky problem itself is a testimony that no single operation is favoured by all surgeons and no single technique provides uniformly good results.[4,5] One stage repair is naturally favoured as it decreases operative trauma, decreases number of hospitalizations and thus is economical.[6]

Previously it was thought that a fibrotic urethral plate causes chordee but it is now recognized that it is the ventrally deficient shaft skin which tether the corpora carvernosa and glans resulting in penile bending.[1,2,7] It is generally accepted that the urethral plate itself is usually supple and therefore, should not be excised while repairing the hypospadias. This concept was the principal behind the tabularized incised urethroplasty repair of hypospadias popularized by WT Snodgrass in 1994.[5] The urethral plate can be primarily tubularized without an additional skin flap after a dorsal midline relaxing incision is made.[8,9] The rich vascularity of the healthy urethral plate support prompts re-epithelialization without scarring the neourethra. Snodgrass tubularized incised plate urethroplasty (TIP) has gained widespread acceptance for repairing distal and proximal hypospadias.[10] Since that time many reports have been published describing the success of this procedure with minimal complications. We conducted this study to know the outcome of Snodgrass technique for the repair of anterior hypospadias in our set up.

MATERIAL AND METHODS

This study was conducted at Aman Hospital Peshawar from January 2004 to January 2007 on patients with anterior hypospadias with or without chordee. The Snodgrass repair was performed on all cases. There were 35 distal and 15 midpenile hypospadias; classified after releasing of the cutaneous chordee by degloving the prepuce down to the penoscrotal junction. Mild to moderate chordee were found in 05 patients.

A circumcising incision was made dorsally 5 mm proximal to the corona and ventral incision was made 2 mm proximal to the urethral opening. The penile skin was degloved by sharp dissection, carefully preserving the urethral plate. Dorsal plication of the corpora was done to correct the residual chordee. Two ventral parallel incisions were made along the urethral plate. The two glanular wing flaps were dissected freely deep to the corpora carvernosa. A midline incision was made along the urethral plate and widening of the urethral plate was noticed. A 6 or 8 Fr catheter was passed to the bladder. The neourethra was tubularized with 6-0 polyglactin absorbable suture over the catheter by running interrupted sutures proximally. The repair was checked for any leak by injecting normal saline into a 22G cannula passed into neomeatus. The subdartos flap was created to cover the suture line. The glanular part of the urethra was sutured in 2 layers; the first layer was secured in the deep glanular tissue followed with a second layer approximating the glans wings. The excess penile skin was resected and the median raphe was rotated to align with the ventral midline of the glans. The skin was re approximated with 6-0 chromic catgut interrupted or subcutaneous sutures to cover the penis. The bactigrass was rolled over the penile shaft and sandwich pressure dressing applied for hemostasis and immobilization purposes. The patients were discharged on the next day on oral antibiotics and pain killer and were asked to come after 7 days. The urethral catheter and pressure dressing were removed at on 7th post-operative day and patient sent home when he passed urine. All patients were advised for revisit after 2 weeks to know the outcome of the repair and the urinary stream. Early or late meatal dilatation was advised in suspected meatal stenosis or in cases with poor urine stream. All the patients were followed up for 6 months.

RESULTS

The Snodgrass (TIP) urethroplasty was performed in 50 boys with anterior hypospadias. The age of the patients ranged from 3 to 10 years with a mean of 3.73. There were 35(70%) distal penile and 15(30%) midshaft hypospadias. Five (10%) patients had mild chordee which was corrected when the penis was degloved and only 2 patients required dorsal plication. The operative time was 60 to 100 minutes, average 75 minutes. The complications rate in our study is 14% as shown in table 1.

COMPLICATIONS OF SNODGRASS TUBULARIZED INCISED PLATE URETHROPLASTY

Complications	Number of Patients (n=50)	Percentage
Urethro Cutanous Fistula	5	10
Meatal stenosis	3	6
Glans dehiscence	1	2

Table 1

Five patients (10%) had pinpoint fistula formation in the early post-operative period which healed spontaneously and 1 required simple repair procedure. Dehiscence of the glanular part of neourethra occurred in 1(2%) case which was successfully repaired after six months. Three (6%) patients had a mild degree of meatal stenosis which responded to meatal dilatation. Most boys had excellent cosmetic and vertical slit like urethral meatus. No urethral stricture, ventral chordee and urethral diverticulum, were noticed during follow-up.

DISCUSSION

There are many popular single stage procedures of hypospadias repair like Mathieu 1932), Asopa (1971), Duckett (1980), Harris (1984).[11] In 1994, WT Snodgrass described tubularized incised plate urethroplasty which is based on the principle of closure of the urethral plate ventrally in the midline, over a urethral stent, after having made a deep sagital release incision on the midline of the urethral plate. Most of these give satisfactory results if performed carefully. However because of adverse conditions like repair under tension, edema, hematoma, friable and scarred tissue, erection in the immediate postoperative period and infection, subject the repair to complications.[12]

It is believed that every primary procedure for hypospadias should begin with preservation of the urethral plate as the penis is degloved. Decision making is done after the chordee has been corrected and the maturity of the urethral plate assessed. Nearly all distal and many proximal hypospadias defects can be repaired by incising and tubularizing the urethral plate. Overall cosmetic results, in terms of conical glans with slit like meatus at the tip, were not good in all patients. We found the procedure to be quick, the average time taken being only 57.4 minutes. Moreover being a single stage procedure patient

did not require multiple anesthetic exposures and hospitalizations. The optimal age for the repair is between 2-3 years but we treated in the present study mostly older children of proximal hypospadias with this technique in 15 cases. Haq AU compared Mathieu repair and Tubularized Incised Plate (TIP) urethroplasty (Snodgrass procedure) and found that cosmetic results were excellent with Snodgrass procedure.[13] Complications of this technique of hypospadias repair usually ranged from 2- 18 percent.[14,15] The present series showed a complication rate of 14 percent, which includes fistula formation, meatal stenosis and glanular dehiscence. Our results are in agreement with those reported by Snodgras(16%)[1], Baskin(23%)[7] and khattak I U et al(33%).[11] Haq AU[13] observed meatal stenosis in 5.5%, fistula in 3.3%, stricture in 2.2% and wound breakdown in 1.1% of patients operated with Snodgrass procedure.The mechanism of fistula formation may be due to needle mark, flap necrosis from the pressure dressing over a long period of time, outlet obstruction from some degree of meatal stenosis. The authors have to consider these risk factors to reduce fistula formation in the future. The over zealous glans suturing may cause meatal stenosis, stricture at the glanular part of the neourethra and dehiscence of the glans repair which may need regular urethral dilatation or surgical intervention.

Inadequate mobilization of the glans wings and subsequent approximation under tension was responsible for the glanular dehiscence in the early part of the study. It required operative closure 6 months later. None of the small fistulas required operative closure as they were not associated with significant meatal stenosis or urethral stricture except one case which was repaired after 6 months. Regular urethral calibration prevented narrowing of the neourethra which was done only in 5 (10%) patients post operatively.

The patients who had unsatisfactory (angled) urinary stream were observed and with time it corrected by itself without any surgical intervention.

CONCLUSION

Snodgrass tubularized incised plate urethroplasty is a simple, quick, single stage procedure suitable both for mid and distal penile hypospadias repair. It provides excellent functional neourethra, cosmetically normal looking glans and meatus and is associated with very few complications. It has become the preferred technique of hypospadias without extensive chordee, in primary repair of distal and mid penile.

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